

B&D No. P-TN-1698

REMARKS

No claims have been amended. Currently in the above-identified application therefore are Claims 1-11.

The Examiner objected to the drawings because of the reference numerals "13", "15" and "H". In response, Applicant has deleted reference numerals "13" and "15" from FIGS. 1-2 and 4-6. The amended figure, with modifications marked in red, has been enclosed with a separate letter to the draftsman. No new matter has been introduced.

As to reference numeral "H", Applicant does not know why the Examiner objects thereto. Applicant also notes that the Examiner objected to the specification because the reference numeral "H" is not in the drawings. Applicant points out that "H" is in FIG. 2, due left of reference numeral "21E".

The Examiner objected to the Abstract because of the first sentence. Accordingly, Applicant has deleted the first sentence.

The Examiner has rejected Claims 1-11 under 35 USC § 102(b) and/or § 103(a) as unpatentable over DE 197 06 408 ("DE '408"). These rejections are respectfully traversed.

Under § 102(b), a person cannot receive a patent if "the invention was patented or described in a printed publication in ... a foreign country... more than one year prior to the date of application for patent in the United States." In other words, Applicant would not be entitled to a patent if the reference was patented or published less than one year prior to the earliest US filing date. In addition, the Examiner cannot rely on a reference for § 103(a), unless the reference is proper § 102(b) prior art. See MPEP § 2141.01(I).

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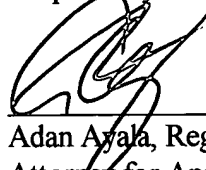
In the present case, because Applicant has based the present application on a prior provisional application, Applicant's earliest US filing date is July 28, 1999 (see attached oath and declaration). Accordingly, the reference must have been patented or published by July 27, 1998. As shown in the highlighted portion of the attached Dialog print-out, DE '408 was published on August 20, 1998. Thus, DE '408 cannot be used as § 102(b) prior art. Similarly, the Examiner cannot use DE '408 for the § 103(a) rejection because it is not § 102(b) prior art. Therefore, Applicant urges the Examiner to withdraw the § 102(b)/§ 103(a) rejections.

Finally, Applicant has obtained a translation of DE '408, which is attached hereto. This should not be construed as an admission that DE '408 constitutes proper prior art against the present application.

In view of the foregoing, all the claims are patentable and the application is believed to be in condition for formal allowance. Reconsideration of the application and allowance of Claims 1-11 are respectfully requested.

No fee is due for the present amendment. Nevertheless, the Commissioner is authorized to charge payment of any fees due in processing this response, or credit any overpayment to Deposit Account No. 02-2548.

Respectfully submitted,



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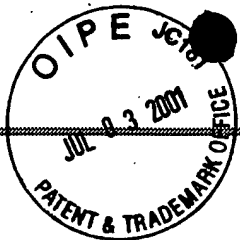
Attachment for Abstract Amendments

The following is a marked up version of the Abstract, in which brackets indicate deletions.

ABSTRACT

[In accordance with the present invention, an improved miter saw is employed.] The miter saw includes a base assembly, a rotatable table rotatably connected to the base assembly, the table having a table plane, a fence connected to the base assembly and having a fence plane, a saw assembly including a motor and a blade driven by the motor, the blade having a radius and a blade center, and a pivot arm pivotally attached to the table and pivotally supporting the saw assembly about a first axis substantially parallel to the table plane, allowing a user to plunge the blade below the table plane, wherein the distance between the first axis and the table plane is about 0.472 times the radius. Also, the distance between the first axis and the fence plane is about 1.45 times the radius, and the distance between the first axis and the blade center is about 1.882 times the radius. In addition, the distance between the blade center and the table plane is about 0.57 times the radius when the blade is plunged below the table plane.

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012031297 **Image available**

WPI Acc No: 1998-448207/199839

XRPX Acc No: N98-349422

Circular cross-cut- and mitre saw - comprises horizontal support surface which is vertically adjustable by prescribed distance in direction of saw blade's rotational axis, and side stop adjustable in lateral direction

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Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 19706408	A1	19980820	DE 1006408	A	19970219	199839 B

Priority Applications (No Type Date): DE 1006408 A 19970219

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 19706408	A1		6	B23D-047/04	

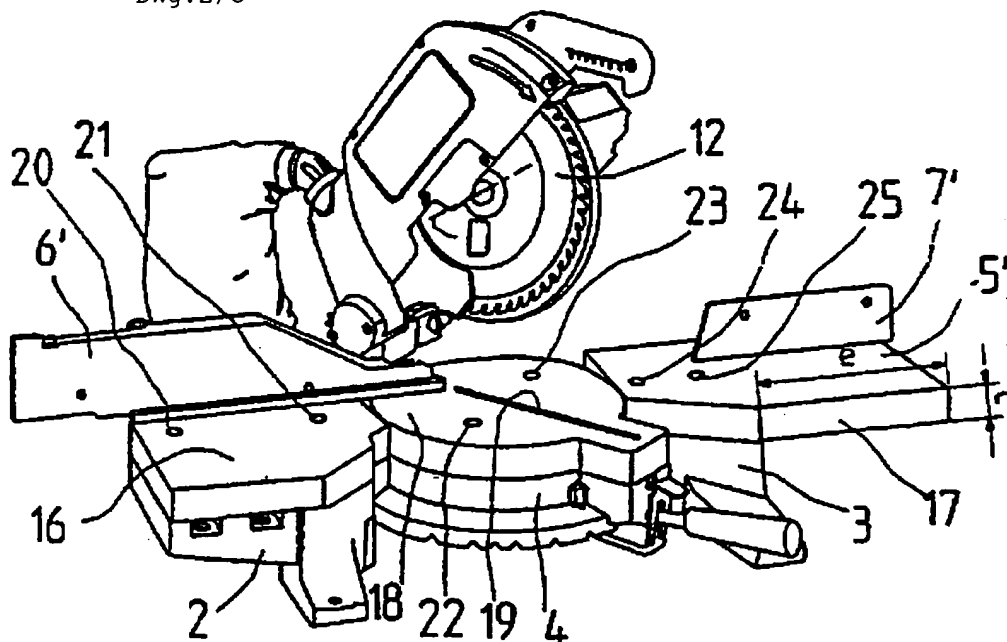
Abstract (Basic): DE 19706408 A

The horizontal support surface(5) for the workpiece, by means of a spacing device(16,18), is vertically adjustable by a prescribed distance(c) in the direction of the saw blade's rotational axis, and the side stop(6,7) is adjustable in the lateral direction.

The spacing device is formed by a baseplate unit which has two outer plates(16,17) for the outer parts(2,3) of the saw table, and a centre plate(18) for the rotary plate(4).

ADVANTAGE - By simple repositioning measures broader workpieces can be sawn.

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Title Terms: CIRCULAR; MITRE; SAW; COMPRISE; HORIZONTAL; SUPPORT; SURFACE; VERTICAL; ADJUST; PRESCRIBED; DISTANCE; DIRECTION; SAW; BLADE; ROTATING; AXIS; SIDE; STOP; ADJUST; LATERAL; DIRECTION

Derwent Class: P54; P64

International Patent Class (Main): B23D-047/04

International Patent Class (Additional): B23D-045/14; B28D-001/02;

B28D-001/04
File Segment: EngPI

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Translation of DE-A 197 06 408 A1

Crosscut and mitre saw

A crosscut and mitre saw has a saw table (1) which forms an essentially horizontal supporting surface (5) for a workpiece and carries side stops (6, 7) for the latter. A saw head (10) is mounted on the saw table (1) in such a way that it can be pivoted manually about a horizontal axis (B) up to an end stop. A rotary table (4) with a saw slot (9) is arranged on the saw table (1). In order to also be able to saw through wide workpieces by simple resetting measures, the supporting surface can be displaced upward in the direction of the rotation axis (D) of the saw blade (12) by a height (c) by means of a spacing device (16 to 18). The side stop (6, 7) is adjustable in the lateral direction (d).

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Description

The invention relates to a crosscut and mitre saw having a saw table which forms an essentially horizontal supporting surface for a workpiece and carries a side stop for the workpiece, a saw head being mounted on the saw table in such a way that it can be pivoted manually about a horizontal axis up to an end stop, and a rotary table with a saw slot being arranged on the saw table, and the saw head striking the end stop when its rotating saw blade engages in the saw slot.

Such crosscut and mitre saws are used for cutting long workpieces to length, for example strips or tubes. During such sawing, the workpiece width which can be sawn through is restricted by the position of the supporting surface of the saw table and by the diameter of the saw blade engaging at the end stop in the saw slot of the saw table. Wider workpieces can be sawn with saw blades of larger diameter. However, it is not possible to simply use a larger saw blade in a crosscut and mitre saw, since a protective hood of the crosscut and mitre saw is designed for the diameter of the saw blade.

In order to also be able to saw wider workpieces, it has been proposed to arrange the saw head so as to be horizontally displaceable. However, such a construction is expensive and leads to greater weight and larger dimensions of the crosscut and mitre saw.

The object of the invention is to propose a crosscut and mitre saw of the type mentioned at the beginning, with which, by simple resetting measures, wider workpieces can also be sawn through.

The above object is achieved according to the invention by the features of the defining part of claim 1.

If the supporting surface on the saw table has been displaced upward by the spacing device, a

workpiece placed on the saw table then inevitably lies in the region of a larger chord of the saw blade of the saw head pivoted up to the end stop than is the case when the workpiece is placed directly onto the saw table. For this purpose, the side stop is adjustable in such a way that the corner points of the wider workpiece lie inside the area of the saw blade. It is thus possible to saw through a wider workpiece when the supporting surface is raised than when the supporting surface is in a lower position, and a thicker workpiece can be sawn through when the supporting surface is lower than when the supporting surface is in a higher position.

The spacing device is preferably formed by a support-plate unit which can be put onto the saw table. In accordance with the construction of the saw table, the support-plate unit preferably consists of two outer support plates and a center support plate for the rotary table. As a result, in every angular position of the rotary table, the saw blade always plunges into the same slot and does not cut the wooden board.

In an advantageous development of the invention, the support-plate unit is made of wood. This is because wood is light and can be easily worked. At the same time, it is also not necessary to prefabricate the saw slot of the support plate of the rotary table. It is sawn at the same time as a workpiece in the correct position during the initial use of the support plate. However, the support-plate unit may also be made entirely or partly of plastic.

The side stops are preferably adjusted by being removed from the saw table, in particular unscrewed, and by being put onto the support-plate unit, specifically the two outer support plates, at a predetermined location. The side stops can be fastened together with the support-plate unit, specifically the outer support plates, for example by means of screws.

It is also possible to form the side stops on the support-plate unit directly, in particular also in one

piece. This is because their desired position depends directly on the height of the spacing device. The side stops of the saw table are always to be removed before the support-plate unit is put on.

5 The support-plate unit may also be constructed in one piece. In this case, the center part of the support-plate unit cannot be rotated together with the rotary table. In the case of mitre cuts of different angle, perpendicular and angled saw cuts are then
10 inevitably produced in the center region of the support-plate unit.

It is also possible, instead of the support-plate unit, to provide a lifting device as the spacing device for the saw table, by means of which lifting device the
15 supporting surface of the latter can be shifted upward.

Further advantageous developments of the invention follow from the subclaims and the description below. In the drawing:

Fig. 1 shows a crosscut and mitre saw for use without a
20 spacing device,

Fig. 2 shows the crosscut and mitre saw with attached spacing device,

Figs 3 and 4 show the saw geometry when using the crosscut and mitre saw without a spacing device,
25 and

Fig. 5 shows the saw geometry when using the crosscut and mitre saw with a spacing device.

A crosscut and mitre saw has a saw table (1) which forms two outer parts (2, 3) and, between the latter, a
30 rotary table (4). The two outer parts (2, 3) and the rotary table (4) together form a horizontal supporting surface (5) for a workpiece (not shown in figs 1 and 2).

Side stops (6, 7), which partly project across the
35 rotary table (4), are detachably fastened to the outer parts (2, 3), for example by means of screws. The rotary table (4) can be pivoted in steps or in a stepless manner about a vertical axis (A) by means of a

handle (8). A saw slot (9) is provided in the rotary table (4).

A saw head (10) is mounted on the rotary table (4) in such a way as to be pivotable about a horizontal axis (B). A top end stop is provided for the position shown in figs 1 and 2. The saw head (10) can be pivoted relative to the rotary table (4) about a further vertical axis (C) in order to create angled mitre cuts. The saw head (10) forms a protective hood (11) for a saw blade (12), which is mounted on the saw head (10) by means of a flange (13) and can be driven about a rotation axis (D) by means of an electric motor (14) arranged on the saw head (10). A handle (15) for pivoting the saw head (10) about the axes (B and C) is provided on the saw head (10). For that end position of the saw blade (12) which is pivoted about the axis (B) into the saw slot (9), there is a bottom end stop such that the saw blade (12) cannot be pivoted further into the saw slot (9) by means of the handle (15), that is to say that this pivoting is possible without damage.

Various workpieces (W1, W2, W3) which are to be sawn through are shown in cross section in figs 3 to 5. The workpieces are, for example, strips of wood. The workpiece (W1) has a virtually square cross section. The workpiece (W2), in contrast, has a smaller thickness (D2) and a larger width (B2). The workpiece (W3) has a markedly smaller thickness (D3) than the workpiece (W2) and a substantially larger width (B3) than the workpiece (W2). The workpiece (W3) is, for example, a floor, wall or ceiling board, whereas the workpieces (W1, W2) are square-edged timber pieces. Saw blades (12) having the same diameter (12.1) and flanges (13) having the same diameter (13.1) are shown in each case in figs 3 to 5. To simplify the drawing, the saw teeth of the saw blade (12) are not shown. The diameter (12.1) of the saw blade (12) is about 254 mm, the diameter (13.1) of the flange (13) being about 50 mm.

The workpieces (W1, W2) can be sawn through with the crosscut and mitre saw in the embodiment according

to fig. 1. For this purpose, the workpieces (W1 or W2) are placed on the supporting surface (5) of the saw table (1) against the side stops (6, 7), and the saw head (10) is pivoted downward in the direction of the arrow (S) about the axis (B). When the workpiece (W1) has been sawn through, the saw blade (12) has covered its bottom corner points (W1.1 and W1.2), and the flange (13) virtually strikes a top center point (W1.3) of the workpiece (W1). In the process, the bottom end stop has still not been reached. The workpiece (W) has, for example, a cross section of about 100 mm in width (B1) and about 90 mm in thickness (D1).

The workpiece (W2) (cf. fig. 4) can also be sawn through in the crosscut/mitre saw configuration according to fig. 1. The width (B2) is, for example, about 140 mm and the thickness (D2) is about 60 mm. In fig. 4, the saw head (10) in this case is pivoted in the direction of the arrow (S) further in the direction of the bottom end stop without reaching the latter. In the process, the saw blade (12) penetrates further into the saw slot (9) than is the case during the sawing according to fig. 3. The saw blade (12) enters the saw slot (9) of the rotary table (4) by the depth (a).

The workpiece (W3), whose width (B3) is about 210 mm to 220 mm and whose thickness (D3) is, for example, about 15 mm to 20 mm, obviously cannot be sawn through with the mitre saw in the configuration according to fig. 1. So that a workpiece like the workpiece (W3), which is substantially wider than but not as thick as the workpieces (W1, W2), can also be sawn through with the crosscut/mitre saw, a spacing device formed by a support-plate unit is provided.

The support-plate unit consists of two outer support plates (16, 17) and a center support plate (18) (cf. fig. 2). The outer support plate (16) is adapted in its basic format to the outer part (2) of the saw table (1). The support plate (17) projects beyond the part (3) of the saw table (1) by the amount e, the stop (7') in fig. 2 also being displaced by this amount e

relative to the stop (7) in fig. 1. As a result, the saw motor does not strike the stop (7) in any position of the rotary table. The center support plate (18) is adapted to the rotary table (4). The height or thickness (c) of the support plates (16 to 18) is identical and is about 6% to 20% of the diameter of the saw blade (12), for example 30 mm. The support plates (16 to 18) put onto the saw table (1) form a smooth supporting surface (5') for the workpiece (W3), this supporting surface (5') being displaced upward in the direction of the rotation axis (D) by the distance (c) relative to the supporting surface (5).

The support plates (16 to 18) are made of wood. The center support plate (18) has a saw slot (19) which is in alignment with the saw slot (9) of the rotary table (4). The saw slot (19) need not be preformed on the center support plate (18). It can be obtained when work is carried out with the support-plate unit (16 to 18) during sawing operation. The support plates (16, 17) are screwed by means of the screws of the stops (6, 7) into the threads (20, 21, 24, 25) provided for these screws.

Since the side stops (6, 7) would get in the way in their position according to figs 1, 3 and 4, they are removed from the saw table (1) and, for work with the support-plate unit (16 to 18), are put onto the outer support plates (16, 17) at a distance (d) (cf. fig. 5) from their original position (cf. figs 3, 4). The side stops in this position are designated by 6', 7' in fig. 5. The means of fastening the outer support plates (16, 17) to the outer parts (2, 3) of the saw table (1) and the side stops (6', 7') may be provided by a common, screwed connection (not shown in any more detail), by means of which, on the one hand, the side stops (6', 7') are fastened to the outer support plates (16, 17) in the correct position (distance d) and, on the other hand, the side stops (6', 7') and the outer support plates (16, 17) are fastened to the outer parts (2, 3) of the saw table (1). The side stop (7') is

additionally displaced to the right by the amount e in order to prevent the motor from coming down on it.

It is also possible to form separate side stops (6', 7') on the outer support plates (16, 17), in which case the side stops (6, 7) of the saw table (1) are then laid aside when working with the support-plate unit.

In the configuration of the crosscut/mitre saw according to fig. 2 and fig. 5, the bottom corner points (W3.1 and W3.2), where the distance (d) is about 15% to 30%, in particular about 20%, of the diameter (12.1) of the saw blade (12), lie in the region of the saw blade (12) pivoted in the direction (S) about the horizontal axis (B). The workpiece (W3) has therefore been sawn through when the saw blade (12) has plunged into the saw slots (9) of the rotary table (4) by the depth (b). This plunging depth is smaller than the plunging depth (a) (cf. fig. 4), so that the bottom end stop of the saw head (10) has still not been reached at the plunging depth (b) either. Since, according to fig. 5, the flange (13), at the plunging depth (b), has still not touched the workpiece (W3), it is also possible, in the configuration according to fig. 5, to saw through workpieces whose thickness ($D3$), at the same width ($B3$), is larger than in the workpiece (W3).

In view of the conditions shown in fig. 5 for a workpiece of thickness ($D3$), it would also be possible, with an appropriate thickness of the support plates (16, 17) and with an appropriate lateral position (d) of the side stops (6', 7'), for the saw blade (12) to also saw through workpieces whose width is even larger than the width ($B3$). The limit to this is reached when the flange (13) strikes the workpiece at the top during the pivoting in direction (S). It is ensured in all cases that the workpiece is essentially sawn through before the saw head (10) strikes the bottom end stop when pivoting in direction (S) about the horizontal axis (B).

Patent claims

- Sub B17
1. A crosscut and mitre saw having a saw table which forms an essentially horizontal supporting surface for a workpiece and carries a side stop for the workpiece, a saw head being mounted on the saw table in such a way that it can be pivoted manually about a horizontal axis up to an end stop, and a rotary table with a saw slot being arranged on the saw table, and the saw head striking the end stop when its rotating saw blade engages in the saw slot, wherein the supporting surface (5, 5') can be displaced upward in the direction of the rotation axis (D) of the saw blade (12) by a height (c) by means of a spacing device (16 to 18), and wherein the side stop (6, 7) is adjustable in the lateral direction (d).
 2. The crosscut and mitre saw as claimed in claim 1, wherein the spacing device is formed by a support-plate unit (16 to 18).
 3. The crosscut and mitre saw as claimed in claim 2, wherein the support-plate unit has two outer support plates (16, 17) for outer parts (2, 3) of the saw table (1) and a center support plate (18) for the rotary table (4).
 4. The crosscut and mitre saw as claimed in claim 3, wherein the outer support plates (16, 17) can be fastened to the outer parts (2, 3) of the saw table (1), and wherein the center support plate (18) can be fastened to the rotary table (4) and can be pivoted with the latter.
 5. The crosscut and mitre saw as claimed in one of the preceding claims, wherein the side stops (6, 7) can be removed from the outer parts (2, 3) of the saw table (1) and can be fastened to the outer support plates (16, 17).
 6. The crosscut and mitre saw as claimed in one of the preceding claims, wherein the support plates (16, 17) can be fastened to the outer parts (2, 3) of the

saw table (1) with the same means as the side stops (6', 7'), for example screws.

7. The crosscut and mitre saw as claimed in one of the preceding claims, wherein the height (c) is about
5 6% to 20% of the diameter (12.1) of the saw blade (12).

8. The crosscut and mitre saw as claimed in one of the preceding claims, wherein the distance (d) by which the side stops (6, 7) are adjustable is about 15% to
10 30% of the diameter (12.1) of the saw blade (12), and the distance (e) is so large that the motor does not touch the stop (7) in any pivoted position.

9. The crosscut and mitre saw as claimed in one of the preceding claims 2 to 8, wherein the support-plate unit (16 to 18) is made of a material in which at least
15 one saw slot (19) which is in alignment with the saw slot (9) can be sawn by means of the saw blade (12).

10. The crosscut and mitre saw as claimed in one of the preceding claims, wherein the support-plate unit (16 to 18) is made of wood.

20

2 sheets of drawings attached

Figure 1

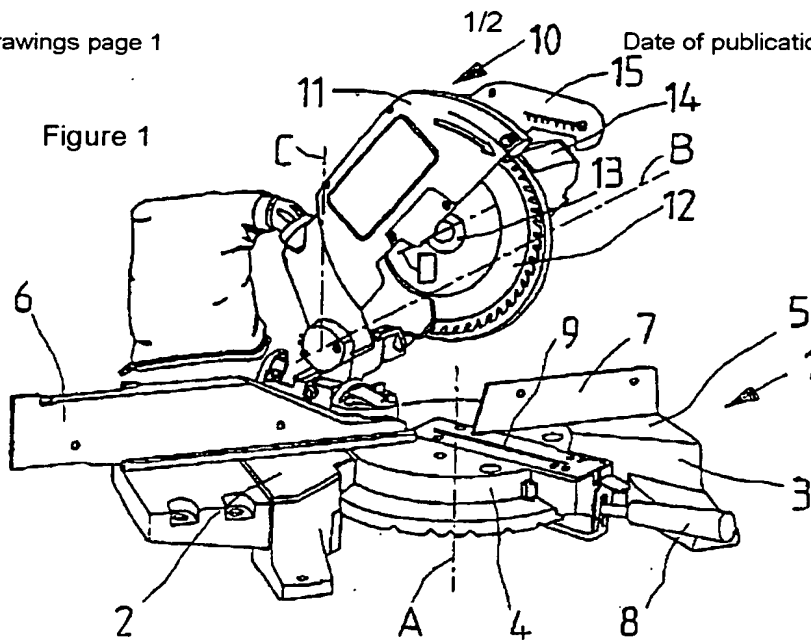
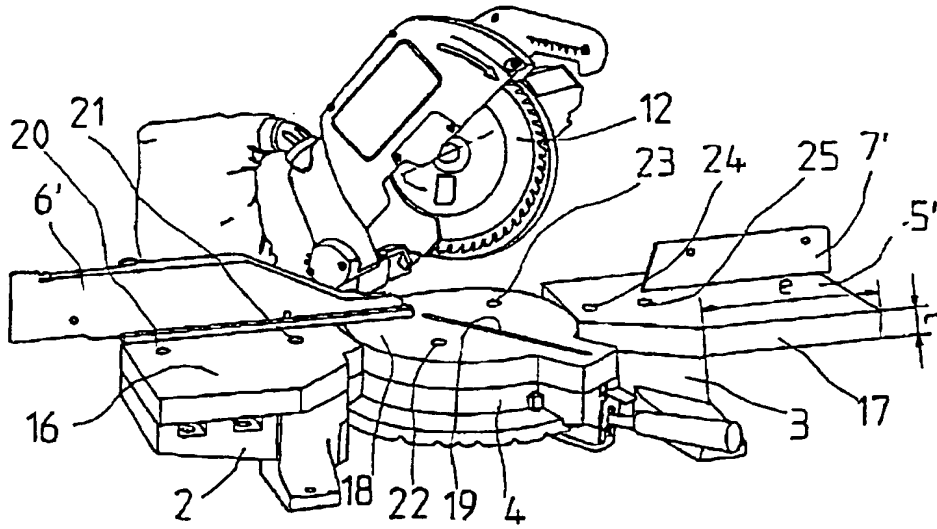


Figure 2



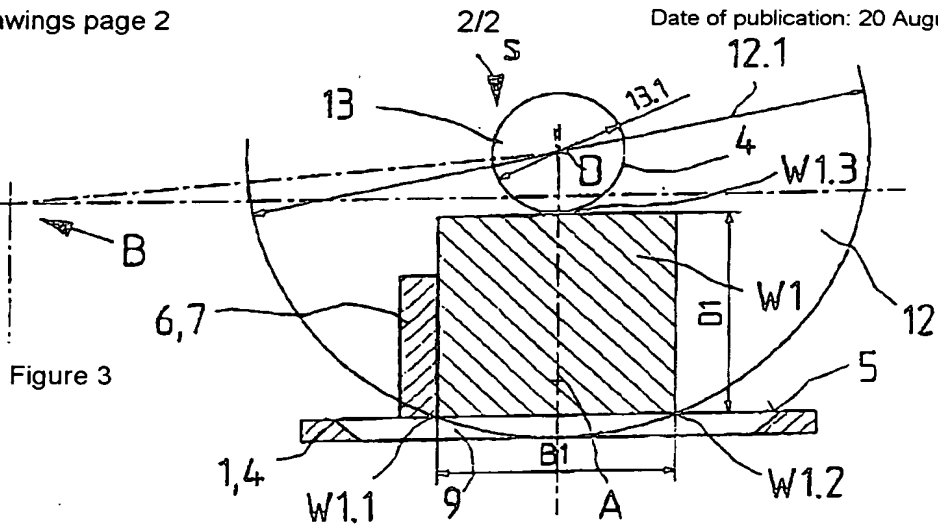


Figure 3

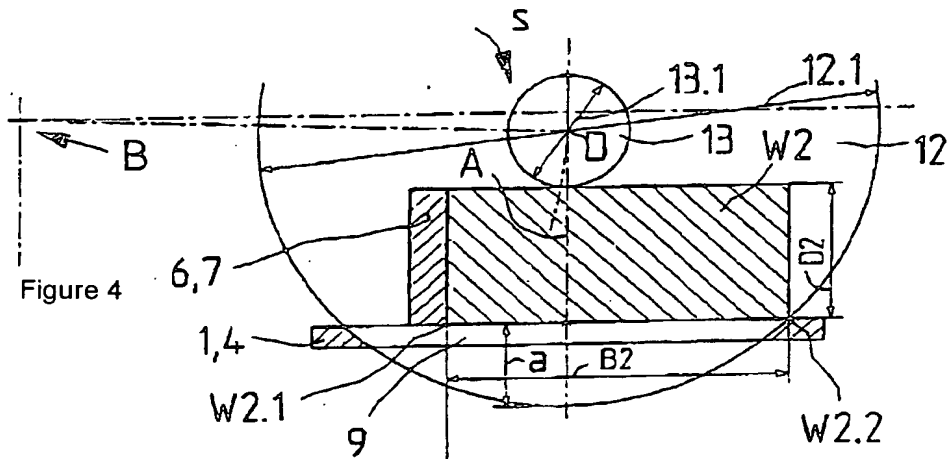


Figure 4

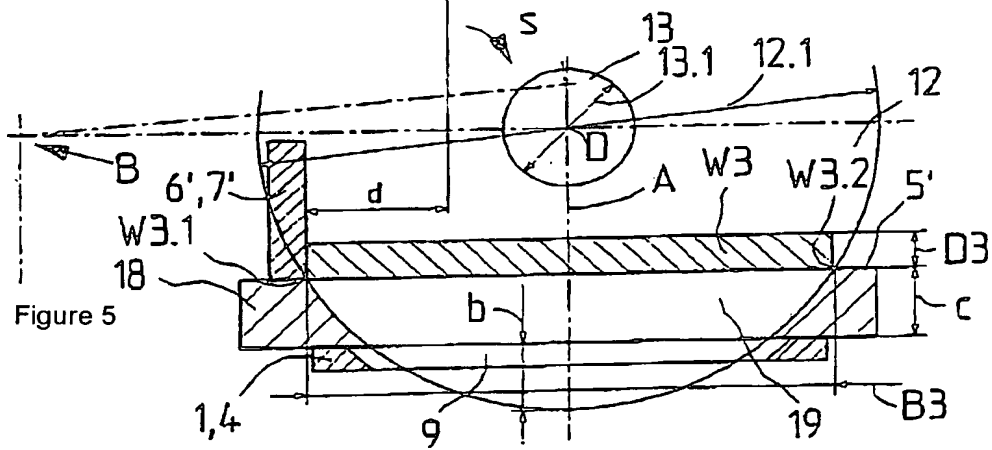


Figure 5